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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,753	12/17/2003	Robert Guido Mejia	200310877-1	5677

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EXAMINER

GOMA, TAWFIK A

ART UNIT	PAPER NUMBER
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2627

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06/14/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/736,753	Applicant(s) MEJIA, ROBERT GUIDO	
	Examiner Tawfik Goma	Art Unit 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.138(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 9 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/17/2003 and 5/10/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is in response to the election filed on 3/27/2007.

Election/Restrictions

Claims 9 and 19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim.

Election was made **without** traverse in the reply filed on 3/27/2007.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, and 5-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Azuma et al (US 6477132).

Regarding claim 1, Azuma discloses a read mechanism used in a contact atomic resolution storage system (fig. 1 and abstract), comprising: a cantilever disposed with a medium which is movable relative to the cantilever (609, fig. 10), the cantilever having a probe which extends from the cantilever and which contacts a surface of the medium (110, fig. 4 and 611, fig. 10); a pod formed on a side of the cantilever facing the medium (106, fig. 4 and 610, 606, fig. 4), the pod extending toward the media (fig. 1 and fig. 3); and a sensor element formed on the pod so as to juxtapose the medium (col. 10 lines 16-28).

Regarding claim 2, Azuma further discloses wherein the pod is formed immediately adjacent the probe (106, fig. 4).

Regarding claim 3, Azuma further discloses wherein the pod at least partially encloses the probe (106, fig. 4 and 6). The pod encloses the probe on the side of the cantilever arm 109.

Regarding claim 5, Azuma further discloses wherein the sensor element forms part of a device which is responsive to an electric field between the medium and the cantilever (col. 10 lines 16-28).

Regarding claim 6, Azuma further discloses wherein the sensor element forms part of a FET (field effect transistor) (col. 10 lines 16-28).

Regarding claim 7, Azuma further discloses wherein the FET is a depletion mode FET (col. 17 lines 4-8).

Regarding claim 8, Azuma further discloses wherein the FET is an enhancement mode FET (col. 17 lines 4-8).

Claim 17 is rejected under 35 U.S.C. 102 (b) as being anticipated by Binnig et al (US 6249747).

Regarding claim 17 Binnig discloses a method of using a read mechanism for a contact atomic resolution storage system comprising: moving a probe supported on a cantilever relative to a medium which has a data indicative topography that is followed by the probe (fig. 3 and col. 6 lines 7-20; and sensing a change in distance between the cantilever and the medium using a change in current flowing through a sensor element formed in a face of the probe juxtaposed the medium (13, fig. 1 and col. 7 lines 31-45).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Azuma et al (US 6477132) in view of Takimoto et al (US 5610898).

Regarding claim 4, Azuma fails to disclose wherein the pod is essentially annular and surrounds the probe. In the same field of endeavor, Takimoto discloses providing a pod that is essentially annular and surrounds the probe (211, fig. 11). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device disclosed by Azuma by providing an annular pod. The rationale is as follows: One of ordinary skill in the art at the time of the applicant's invention would have been motivated to provide an annular pod in order to support the probe during wear caused by contact with the medium.

Claim 10 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Azuma et al (US 6477132) in view of Binnig et al (US 6249747).

Regarding claim 10, Azuma further discloses wherein one of the probe and the medium is electrically non-conductive (col. 8 lines 26-51), and wherein the medium is supported on a substrate which is electrically conductive (col. 7 lines 41-45), and wherein the substrate is circuited with the FET so that variations in the electrical field which result induce a change in electrical current passing through the FET and produces a read signal (fig. 2a, 2b and col. 6 lines 55-67 through col. 7 1-8). Azuma fails to disclose wherein the variations, which cause a change

Art Unit: 2627

in electrical current, are a result of a change in the distance between the medium and the cantilever changing. In the same field of endeavor, Binnig discloses detecting a change in the distance between a cantilever and a cantilever and a medium by detecting a current change (col. 7 lines 26-45). It would have been obvious to one of ordinary skill in the art to modify the device disclosed by Azuma in order to detect a change in distance between a cantilever and the medium as taught by Binnig. The rationale is as follows: One of ordinary skill in the art at the time of the applicant's invention would have been motivated to detect a change in the distance in order to use the device with a medium whose data is formed as indentations in the surface of the recording layer.

Claims 11-16 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Azuma et al (US 6477132) in view of Hopson et al (US 6703258).

Regarding claim 11, Azuma discloses a read mechanism used in a contact atomic resolution storage system (fig. 1 and abstract), comprising: a cantilever (109, fig. 4) disposed with an electrically non-conductive medium (col. 8 lines 26-51) which is movable relative to the cantilever (fig. 3 and col. 7 lines 54-60), the cantilever having a probe which follows a topography of the medium (col. 8 lines 3-13); a sensor pod which is formed on the cantilever proximate the probe and which extends toward the medium (106, fig. 4 and fig. 6). Azuma fails to disclose a device formed in the cantilever, which responds to a change in distance between the cantilever and a substrate on which the medium is supported. In the same field of endeavor, Hopson discloses wherein a device is formed in the cantilever that responds to a to a change in distance between the cantilever and a substrate on which the medium is supported (fig. 3 and col. 2 lines 55-65). It would have been obvious to one of ordinary skill in the provide a device as

disclosed by Hopson for detecting a distance between the cantilever and the medium as taught by Hopson. The rationale is as follows: One of ordinary skill in the art would have been motivated to detect data based on the distance between the cantilever and the medium in order to determine topographical features of a medium and to detect data that is recorded as surface topographical features in the medium.

Regarding claim 12, Azuma further discloses sensor element formed at a leading end of the pod so as to be oriented toward the medium (106-108, fig. 4).

Regarding claim 13, Hopson further discloses wherein the device is a FET (col. 2 lines 60-65). Azuma further discloses wherein the sensor element forms an operative part of a FET for a read device (col. 10 lines 16-20).

Regarding claim 14, Azuma discloses a method of making a read mechanism for a contact atomic resolution storage system comprising (figs. 7-9): forming a cantilever (109, fig. 4), forming a sensor support extension pod on the cantilever (106, fig. 4), forming a probe on the cantilever so as to have a predetermined spatial relationship with the pod (110, figs. 4 and 6); orienting the pod and the probe towards a medium which is movable relative to the probe (fig. 3 and col. 7 lines 54-60); and forming a sensor element in a portion of the sensor support extension pod juxtaposed the medium (col. 10 lines 16-23). Azuma fails to disclose wherein a data indicative topography is formed on the medium and adapting the probe to follow a data indicative topography of the medium. In the same field of endeavor, Hopson discloses using a sensing element to follow a data indicative topography on the medium (col. 2 lines 55-65). The rationale for combining the teachings follows as in claim 11 above.

Regarding claim 15, Azuma further discloses wherein the step of forming the sensor element comprises forming a FET (Field Effect Transistor) and which further comprises forming the medium on an electrically conductive substrate which is circuited with the FET to produce an electric field (col. 10 lines 16-20 and col. 7 lines 41-45).

Regarding claim 16, Azuma further discloses forming one of the probe and the medium of an electrically non-conductive material (col. 8 lines 26-51).

Claim 18 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Binnig et al (US 6249747) in view of Azuma et al (US 6477132).

Regarding claim 18, Binnig discloses everything as applied to claim 17 above. Binnig fails to disclose using a FET (Field Effect Transistor) as the sensor element formed in the sensor support extension pod; and producing an electric field between a substrate on which the medium is supported and the cantilever. In the same field of endeavor, Azuma discloses using a FET (col. 10 lines 16-20), and producing an electric field between the medium and the cantilever (fig. 3). It would have been obvious to one of ordinary skill in the art to use a FET and produce an electric field as taught by Azuma. The rationale is as follows: One of ordinary skill in the art would have been motivated to use a FET and produce an electric field in order to amplify the current detection of Binnig and to increase the scanning speed of the device (see Azuma col. 5 lines 34-45).

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tawfik Goma whose telephone number is (571) 272-4206. The examiner can normally be reached on 8:30 am - 5:00 pm.

Art Unit: 2627

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

T. Goma
/Tawfik Goma/
6/11/2007


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